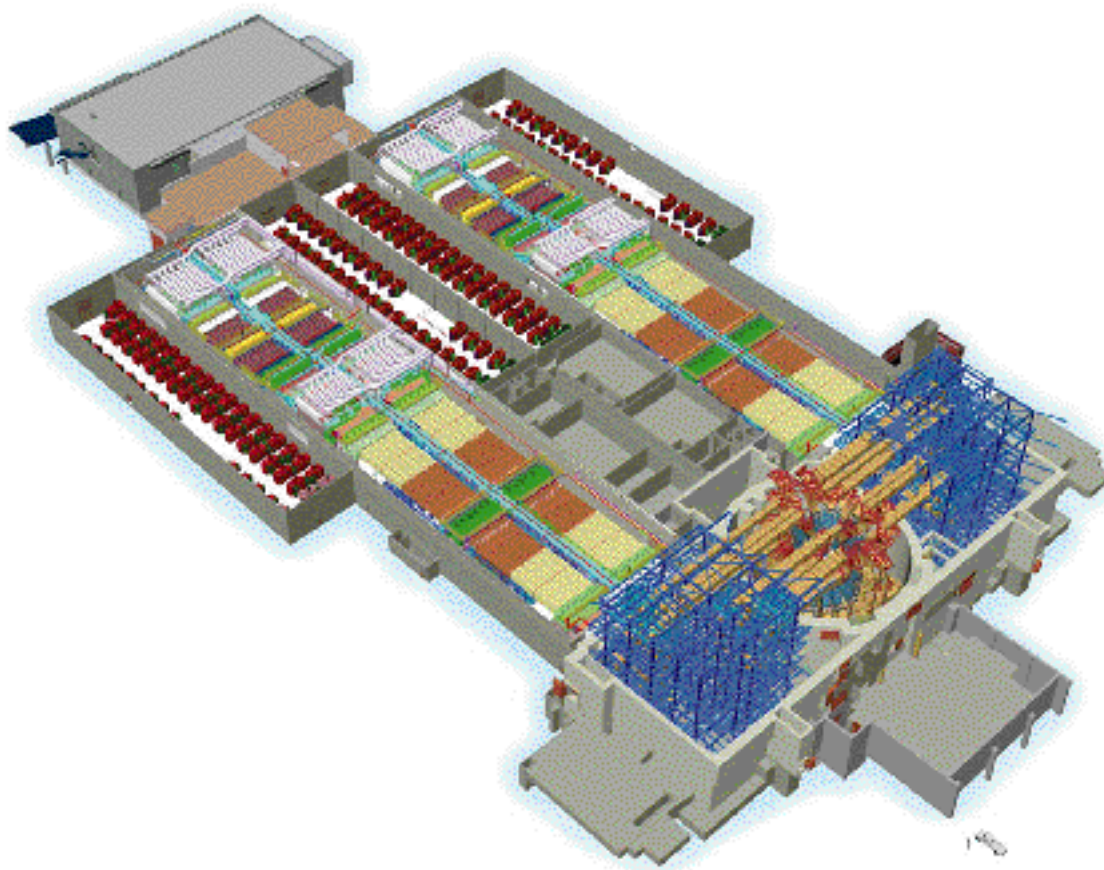




# **National Ignition Facility Management Descriptions Revision 4**



**August 2000**

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# **National Ignition Facility Management Descriptions**

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**August 2000**

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# **National Ignition Facility Management Descriptions**

## **Revision 4**

### **Purpose**

The purpose of this document is to describe the NIF Project Organization and the roles and responsibilities of the managers charged with executing the Project.

### **The NIF Project Organization**

The NIF Project Organization is shown in Figure 1. The basic line organization is classically arranged by functional system. The systems include the Injection Laser System, the Amplifier System, the Final Optics System, the Beam Delivery and Diagnostics System, the Integrated Computer and Controls System, the Target Experimental Systems, and the Conventional Facilities and Beampath Infrastructure Systems. Together, these systems comprise the NIF. The Associate Project Managers for each of these line organizations are charged with “cradle to grave” responsibility for the systems under their purview.

In addition, support organizational elements provide for the management of the processes utilized to execute the Project. These include Mission Support, Systems Engineering; Engineering; Controls Engineering; Production, Assembly, Installation and Refurbishment; and Commissioning and Operations. The Associate Project Managers for these organizations are charged with system integration; promulgation of requirements, processes and procedures; provision of engineering, production, and refurbishment services; and integrated planning for commissioning and operation.

A project office staff provides project control, administration, financial management, and assurances functions. Within LLNL, the NIF Project resides in the NIF Directorate. Personnel management, facilities support, public relations, and additional safety and assurances support are provided by the Directorate Office

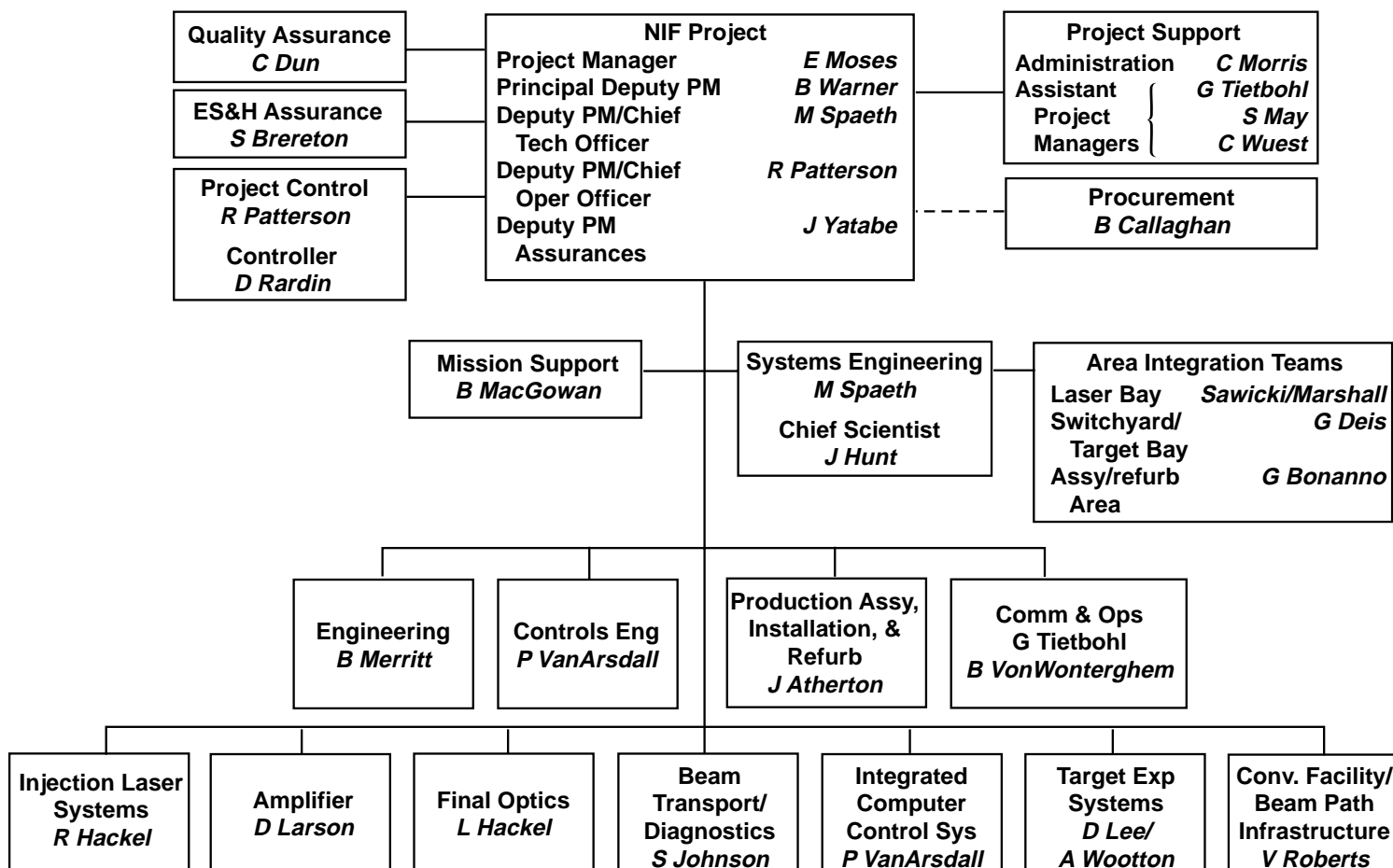
The NIF Project Manager is assisted by Deputy Project Managers, who have been assigned specific oversight responsibilities as delineated below. In addition, Assistant Project Managers provide coordination and special project support to the Project Manager and his deputies.

Institutional Deputies have been assigned from each of the National Nuclear Security Administration (NNSA) Inertial Confinement Fusion (ICF) Laboratories: Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), Sandia National Laboratories (SNL), and the University of Rochester/Laboratory for Laser Energetics. The roles, responsibilities, and interfaces between the Laboratories are spelled out in the Memorandum of Agreement approved by the respective Laboratory ICF Program Managers. Special Project interfaces have also been defined for international collaborations.

# NIFCo Organization Chart



The National Ignition Facility



## Roles and Responsibilities

### Project Manager

The Project Manager has the overall authority and responsibility for the execution of the NIF Project in accordance with the Project Execution Plan (CD079). The Project Manager reports to the Associate Director of NIF Programs and will:

- Ensure that NIF will fulfill its Primary Criteria/Functional Requirements.
- Establish and control the technical, cost, and schedule baselines and report Project status against the baselines to the NNSA.
- Ensure that all Project activities meet all applicable DOE, federal, and UC regulations.
- Ensure that the Project is constructed, activated, and commissioned safely and in compliance with all Project requirements.
- Ensure that environmental, safety, radiation protection, quality assurance (QA), and security programs are established and maintained to meet all applicable, federal, state, and local regulatory requirements; establish and provide resources to implement the Construction Safety Program. Conduct work under the principles and requirements of Integrated Safety Management (ISM).
- Establish and chair the NIF Level 3 Change Control Board (CCB) to assess and act on proposed project changes to the baseline.

### Deputy Project Managers

Four Deputy Project Managers have been established to assist the Project Manager in the execution of his duties. They may be delegated the authority to act for him in his absence. They serve as a management team and are involved in all aspects of the management of the Project, but have also been delegated specific oversight responsibilities.

The **Principal Deputy Project Manager** supports the Project Manager in the execution of the NIF Project in accordance with the Project Execution Plan. The Principal Deputy acts for the Project Manager in his absence. In addition, he/she is responsible for planning and assessing the project personnel requirements and working with LLNL matrix organizations and contractual organizations to provide necessary staff for the project. Other responsibilities include the following:

- Coordinate the development of policies for the NIF Project.
- Facilitate Department of Energy (DOE) oversight activities within the project.
- Manage the relationships with major subcontractors.
- Manage the interfaces to other LLNL and UC organizations.
- Serve as a member of the Level 3 Change Control Board.
- Serve as the project point of contact for both internal and external reviews.
- Serve as the project point of contact for public relations.

The **Deputy Project Manager/Chief Technical Officer** is responsible for technical quality assurance and will:

- Manage the Systems Engineering organization, including the activities of the senior project scientific staff.
- Oversee technical integration activities of the project, including establishment and flow-down of requirements, interfaces, configuration management, commissioning and operations planning, performance, and risk mitigation.
- Establish and conduct a risk identification, evaluation, and mitigation program.
- Serve as a member of the Level 3 Change Control Board.

The **Deputy Project Manager/Chief Operating Officer** is responsible for oversight of the product line organizations and cost and schedule and will:

- Oversee/coordinate the project execution activities of the Associate Program Managers.

- Oversee the financial management and project controls activities.
- Conduct status reviews.
- Serve as a member of the Level 3 Change Control Board.

The **Deputy Project Manager for Assurances** is responsible for oversight of all Project assurance activities and will:

- Oversee/coordinate the QA, ES&H, and ISM activities in the Project.
- Develop and implement procedure policies for project assurances.
- Serve as the interface with the DOE in their compliance audits.
- Interface with the Department of Justice, DOE General Consul, and LLNL Consul on all NIF-related litigation.
- Lead the preparation of National Environmental Policy Act (NEPA) documents working with the DOE (e.g., Supplemental Environmental Impact Statement and Supplemental Analyses).
- Work with the Deputy Project Manager/Chief Operating Officer and the Associate Project Managers to prepare the Project status report.
- Serve as a member of the Level 3 Change Control Board.

### **Institutional Deputy Project Managers**

There are four Institutional Project Deputies who report to the Project Manager, direct their institution's assigned technical responsibility, and represent their institutions. Each Institutional Project Deputy will:

- Represent his/her institution in terms of resource allocation, priorities, and issue resolution. Ensure that NIF-specific plans and procedures are consistent with institutional requirements.
- Plan, direct, control, and report assigned Project technical responsibilities (see Project Execution Plan and Memorandum of Agreement). Ensure that their assigned work follows all federal, state, and regional ES&H requirements, including ensuring that their work meets ISM principles and requirements.
- Serve as non-voting, advisory members of the Level 3 BCCB representing their institutions.

### **Assistant Project Managers**

Assistant Project Managers have been assigned to provide assistance to the Project Manager and Deputy Project Managers as part of the senior management team. Their responsibilities include planning and coordinating Project Office activities, assisting the Project Manager and Deputy Project Managers in the execution of their duties, acting on behalf of Deputy Project Managers as delegated in their absence, and managing special projects as assigned.

### **Area Integration Team Managers**

Area Integration Teams have been established for the Laser Bay, Target Area, and Assembly and Refurbishment areas. The manager of each of these teams is responsible for coordinating the efforts of all organizational elements that contribute to the successful implementation of their assigned areas. As the NIF is constructed, "hand-offs" between organizational elements are required (for example, from the conventional facilities construction team to the line-replaceable unit installation teams, or from the commissioning team to the operations staff). The purpose of the Area Integration Teams is to ensure that the hand-offs are planned, understood, and executed smoothly over all phases of Project execution. The Area Integration Team Managers serve as chairperson of their respective Area Integration Teams, and will:

- Ensure that inter- and intra-area interface requirements are accurately developed and implemented.
- Ensure that issues are identified early and communicated appropriately.
- Establish area priorities and recommend allocation of resources as needed to meet Project milestones.
- Review and approve significant changes or nonconformances in their area prior to CCB action.
- Review planned and current activities in their areas for potential impacts on safety or performance.
- Coordinate acceptance activities.
- Participate in Management Prestart Reviews.
- Facilitate transitions of responsibility from one organization to another for assigned facilities or areas.



## Associate Project Managers

The line managers responsible for the elements of the NIF Project Organization are Associate Project Managers. The Associate Project Managers are responsible for the scope, schedule, budget, and performance for their assigned elements of the Project. They report to the NIF Project Manager and will:

- Ensure that the all equipment design meets applicable ES&H, performance category, QA, security, and other regulatory requirements. Identify institutional controls or establish their own specific work controls to carry out the ISM requirements of DOE Policy 450.4, Safety Management System Policy.
- Ensure the development of Job Hazards Analysis/Safe Plans of Action (JHA/SPA), or if more appropriate, Operational Safety Plans, to evaluate the hazards and the mitigation/prevention actions to ensure the safety of work under their responsibility.
- Prepare and control the Subsystem Design Requirements and Interface Control Documents for the assigned systems.
- Conduct NIF-related Technology Development activities necessary to achieve performance requirements.
- Design, procure, install, and acceptance test all assigned systems. Work with the Engineering Manager to obtain design resources, information system support, and configuration management support. Ensure that design reviews are conducted per the NIF procedures.
- Work with the Production, Assembly, Installation, and Refurbishment (PAIR) Manager to develop and release vendor contracts and to develop plans for the assembly, installation, and refurbishment of necessary hardware.
- Develop the cost and schedule estimates and provide input to the NIF Planning, Tracking, and Scheduling System.
- Oversee preparation and implementation of the Acceptance Test Procedures for their respective areas; turn over the tested systems to the Commissioning Manager through the Management Prestart Review process.
- Work with the System Engineering Manager on risk mitigation; Reliability, Availability and Maintainability; cleanliness; and other engineering integration requirements.
- Work with Controls Engineering to develop interface requirements between local control systems and the NIF's supervisory control system/network.
- Develop, implement, and maintain an adequate QA/QC Program that will, in a cost effective manner, ensure that hardware and software deliverables will be deployed according to NIF standards and will meet essential functional and performance requirements.

These Associate Project Managers are:

**Injection Laser System APM**—responsible for the Injection Laser System (ILS) (NWBS N.L.1.1), which includes the master oscillator room, preamplifier module, preamplifier beam transport, preamplifier structure, input sensor package, and the back reflection sensor.

**Amplifier APM**—responsible for the laser amplifier system (NWBS N.L.1.3), which includes the pulsed power conditioning, amplifier, and amplifier cooling systems.

**Final Optics System/Target Chamber APM**—responsible for the Final Optics System (NWBS N.L.3.2). This includes the integrated optics module, final optics assembly, calorimeter, phase plates, ghost elimination hardware, and associated control systems. The Final Optics System/Target Chamber APM is also responsible for the Target Chamber and Support Systems (N.T.5.2.3), comprising the first wall, environmental protection system, auxiliary systems, and safety systems.

**Beam Delivery/Diagnostic Systems APM**—responsible for the Beam Delivery/Diagnostics system (NWBS N.L.1.2, N.L.2, N.L.3.1, and N.L.3.4). This includes the main laser optical system, multiplexed diagnostics, 1ω optical transport, laser-to-target alignment, and laser system beam control and diagnostics.

**Integrated Computer Controls Systems APM**—responsible for the hardware and software engineering of the NIF integrated computer system (NWBS N.C, N.L.4, N.L.1.4, N.T.7, and N.T.9), consisting of supervisory, control system timing, safety/interlock, computer hardware, safety systems, and laser performance systems.

**Target Experimental Systems APM**—responsible for the Target Diagnostics (NWBS N.T.1, N.T.2, N.T.3, N.T.5.2.1, N.T.6, and N.T.8), which includes the positioners/manipulators, laser on-target diagnostics, target diagnostics, classified systems, and supervisory systems.

**Conventional Facilities/Beam Path Infrastructure APM**—responsible for the NIF Conventional Facilities: Laser and Target Area Building, Optics Assembly Building, central plant, and site upgrades; and the Beampath Infrastructure System consisting of the utility systems, support structures, vessels, and beam tubes (NWBS N.F, N.U, N.L.3.3, N.T.4 (less N.T.4.3), and N.T.5.2.2). This APM will control access to the site, administer the rules and regulations that must be adhered to by anyone working on the site, and serve as line manager accountable to the NIF Project Manager for site safety. He/she will also direct the Construction Manager (CM) and the Integration Management and Installation (IMI) Contractor as the Contracting Officer's Technical Representative.

The managers of the support organizational elements, which provide for the management of the processes utilized to execute the Project, are also Associate Project Managers. They report to the NIF Project Manager, and will:

- Develop, review, and update NIF process standards to ensure adequate guidance for effective and efficient project execution.
- Develop, implement, and maintain an adequate QA/QC Program that will, in a cost-effective manner, ensure that hardware and software deliverables will be deployed according to NIF standards and will meet essential functional and performance requirements.
- Interface with the Product Line organization elements to assure that planning for his/her activities are coordinated and well-integrated with other organizational elements.
- Manage staff required to coordinate and implement all process responsibilities.

These Associate Project Managers are:

**Mission Support APM**—responsible for interfaces with the NIF user community to coordinate their requirements and NIF deployment plans. He/she will represent the interests of the users to the NIF Project during planning (e.g., sequencing of commissioning in order to provide the best early capability with respect to the user needs), commissioning, and operation. The Mission Support APM will also develop (with the Shot Operations ) the experimental plan that best meets the user community needs.

**Systems Engineering APM**—responsible for the technical integration activities of the project, including establishment and flow-down of requirements, interfaces, configuration management, commissioning and operations planning, performance, and risk mitigation.

**Production, Assembly, Installation, and Refurbishment (PAIR) APM**—responsible for the procurement, production, assembly, installation, and refurbishment of the NIF special equipment and optics. In addition, the PAIR APM is responsible for the facilitization and operation of the assembly, refurbishment, and warehouse facilities (NWBSs N.A and N.T.4.3).

**Controls Engineering APM**—responsible for the system architecture and promulgation of standards, policies, and procedures for implementation of the NIF control systems. He/she will oversee control system software engineering, including development and execution of software implementation plans, formal testing, and documentation. He/she will ensure software configuration management is performed in accordance with the NIF Software Configuration Management Plan. He/she will ensure that software QA is performed in accordance with the NIF Ancillary Software Assurance Plan and, with the Assurances Manager, perform audits to ensure that processes are in place and necessary improvements are made.

**Engineering APM**—responsible for defining the process, procedures, and deliverables for the engineering step of the NIF Project. This position is also responsible for associated functions that aid or are required for the completion of the engineering step. These associated functions include managing the designer staff, component engineering, Computer Aided Design (CAD) tools and CAD databases, process and procedures for configuration management, and the information technology group.

**Commissioning and Operations APM**—responsible for commissioning and operation of the NIF. These responsibilities include preparation of the commissioning plan and providing guidelines for test procedure

content and the levels of testing for equipment and subsystems at the various phases of commissioning and management of the commissioning of the laser system and target bay systems. They also include the planning and conduct of the operations and maintenance of the LTAB and other NIF support facilities, implementation of all safety requirements per the LLNL ISM Plan, development and implementation of training and operator qualification programs, and control of security and access to NIF facilities.

### **Project Support Staff**

The **Controller** is responsible for the allocation, rate establishment, control, and reporting of Project fund obligations and expenditures. The Controller reports to the Project Manager and will:

- Interface with the DOE and NNSA on independent cost estimate and validation reviews.
- Develop with the Deputy Project Managers the WBS and WBS dictionary and assure that they are implemented and used consistently.
- Distribute budget allocation to all project elements.
- Maintain the contingency logs for the Project (working with the Secretary of the Level 3 and Level 4 BCCBs).
- Serve as a member of the Level 3 BCCB.

The **Project Administrator** provides administrative functions and assistance in support of the Project and provides full supervision to the Project administrative staff. He/she coordinates assignments for ongoing tasks of mutual benefit and assists in the dissemination of information on Project activities. The Project Administrator reports to the Project Manager and will:

- Manage the Project's administrative staff and coordinate administrative functions in the Project Office.
- Manage Project files and documents; working with the Quality Assurance Manager, maintain the Project QA File (master file).
- Coordinate the Project's appraisal, ranking, and salary management process.
- Manage and coordinate the personnel recruiting functions.
- Coordinate and facilitate Project administrative functions (e.g., training, security, document control, correspondence, classified document accountability, affirmative action, supplemental labor, workforce and space planning) and ensure compliance with LLNL policies and procedures and formulate and implement administrative policies.

The **ES&H Assurance Manager** is responsible for the environmental, safety, health, and security plans and evaluations of the NIF Project. He/she reports directly to the Project Manager. The Manager will:

- Prepare environmental evaluations of the NIF Project. Provide the Project data for the NEPA documentation (DOE contractor), and prepare environmental permits and monitoring.
- Prepare the Construction Safety Program. Participate on the Site Management Team, which coordinates construction safety activities. Review and approve lower-tier Health and Safety Plans.
- Perform safety analyses of NIF construction and operation (Preliminary Hazards Analysis, Preliminary Safety Analysis Report, and Final Safety Analysis Report with Operational Safety Requirements [OSRs]).
- Prepare and ensure implementation of the ES&H Management Plan. Develop the NIF ALARA (as low as reasonably achievable) Program, Security Plan, Risk Management Plan, and OSRs with the Associate Project Manager for Commissioning and Operations.
- Develop the Environmental and Safety Working Group to review Project ES&H issues. Participate in design reviews and public information groups.
- Interface with the DOE OAK ES&H Manager on all assurance issues.
- Provide support to all litigation activities related to environmental issues.

The **Quality Assurance Manager** is responsible for planning, implementing, and auditing QA/QC-related activities on the Project. The QA Manager reports to the Project Manager and will:

- Prepare and lead the implementation of the NIF Project QA Program Plan and ensure that it meets the requirements of applicable DOE Orders and the code of federal regulations.

- Prepare the Implementation procedures in the Project Control Manual. Maintain the Quality Records.
- Provide management with the quality achievement status and recommend means of improving quality performance.
- Develop a project management/quality assurance training and orientation program for Project personnel.
- Maintain the QA File.
- Establish generic work descriptions/controls and instructions (QA procedures) such as those contained in the Project Control Manual.
- Verify the quality of Project and contractor work by audit and independent Management Review.
- Investigate quality issues when necessary and furnish quality assurance expertise to Project assessments.
- Establish the Project Identification and Correction System and ensure that it is implemented.
- Support the design review process, ensuring that they are scheduled and documented and that action items are tracked to closure.
- Assure that the Associate Project Managers and/or subcontractors at the appropriate level develop organization-specific (sub-tier) QA/Management Plans and implementing procedures.